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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : C12N 15/49, 15/62, C07K 14/16, 19/00, 14/03, A61K 39/21, 39/245	A3	(11) International Publication Number: WO 96/30523 (43) International Publication Date: 3 October 1996 (03.10.96)
(21) International Application Number: PCT/EP96/01433 (22) International Filing Date: 1 April 1996 (01.04.96) (30) Priority Data: 95 10 4848.7 31 March 1995 (31.03.95) EP <i>(34) Countries for which the regional or international application was filed:</i> DE et al. 95 10 4849.5 31 March 1995 (31.03.95) EP <i>(34) Countries for which the regional or international application was filed:</i> DE et al. 95 10 4850.3 31 March 1995 (31.03.95) EP <i>(34) Countries for which the regional or international application was filed:</i> DE et al. (71)(72) Applicant and Inventor: WOLF, Hans [DE/DE]; Josef-Jägerhuber-Strasse 9, D-82319 Starnberg (DE). (72) Inventors; and (75) Inventors/Applicants (for US only): WAGNER, Ralf [-/DE]; Franz-von-Taxis-Ring 4, D-93049 Regensburg (DE). DEML, Ludwig [-/DE]; Schneitweger Strasse 30, D-93128 Regensburg (DE). OSTERRIEDER, Klaus [-/DE]; Holzhauser Strasse 30, D-86919 Utting (DE). NOTKA, Frank [-/DE]; Gebhardstrasse 5, D-93059 Regensburg (DE).	(74) Agent: VOSSIUS & PARTNER; P.O. Box 86 07 67, D-81634 München (DE). (81) Designated States: BR, CA, CN, JP, US, ARIPO patent (KE, LS, MW, SD, SZ, UG), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 17 April 1997 (17.04.97)	
(54) Title: ANTIGEN PRESENTATION SYSTEM BASED ON RETROVIRUS-LIKE PARTICLES		
(57) Abstract <p>The present invention relates to the provision of an antigen presentation system on the basis of a DNA sequence encoding a protein capable of self assembly into particles without a lipid membrane, preferably a retroviral group-specific antigen (gag) that can be used, e.g., for the preventive and therapeutic immunization of mammals against infectious diseases or neoplasias.</p>		

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INTERNATIONAL SEARCH REPORT

International Application No
PC1/EP 96/01433

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C12N15/49 C12N15/62 C07K14/16 C07K19/00 C07K14/03
A61K39/21 A61K39/245

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 C12N A61K C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 91 07425 A (ONCOGEN LIMITED PARTNERSHIP) 30 May 1991 see examples 8,9 ---	1-9, 11-13, 16,17, 19-26
X	EP 0 508 809 A (BRITISH BIOTECHNOLOGY LIMITED) 14 October 1992 see the whole document ---	1-26
X	WO 91 05864 A (CONNAUGHT LABORATORIES LIMITED) 2 May 1991 see the whole document ---	1,3,6-9, 11-13, 16,19-26
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

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T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

6 March 1997

Date of mailing of the international search report

17.03.97

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 96/01433

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 91 19803 A (APPLIED BIOTECHNOLOGY) 26 December 1991 see the whole document ---	1,3,6-9, 11-13, 16,19-21
X	WO 92 03537 A (THERION BIOLOGICS CORPORATION) 5 March 1992 see the whole document ---	1,3-8, 15-17, 19-26
X	CA 2 098 029 A (CONNAUGHT LABORATORIES) 10 December 1994 see the whole document ---	1-3, 6-13,16, 17,19-26
A	J. GEN. VIROL., vol. 75, 1994, pages 2041-2046, XP002027076 N. OSTERRIEDER ET AL.: "Expression of equine herpesvirus type 1 glycoprotein in E. coli and insect cells" see the whole document ---	6-8
A	GENE, vol. 58, 1987, pages 149-154, XP002027077 M. MOTZ ET AL.: "Truncated versions of two major Epstein-Barr viral glycoproteins are secreted by recombinant chinese hamster ovary cells" see page 151 - page 152, column 2, line 3 ---	15
A	J. VIROL., vol. 64, no. 6, 1990, pages 2653-2659, XP002027078 O. HAFFAR ET AL.: "Human immunodeficiency virus-like, non-replicating gag-env particles assemble in a recombinant vaccinia virus expression system" see the whole document ---	1
X,P	VIROLOGY, vol. 208, 1995, pages 500-510, XP002027079 N. OSTERRIEDER ET AL.: "Protection against EHV1 challenge infection in the murine model after vaccination with various formulations of recombinant glycoprotein gp14 (gB)" see the whole document ---	1-26

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 96/01433

C.(Continuation) D. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	<p>WO 96 05292 A (CONNAUGHT LABORATORIES LIMITED) 22 February 1996</p> <p>see examples 1-5 -----</p>	<p>1-3, 6-13, 15-17, 19-26</p>

INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP 96/01433

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 26
because they relate to subject matter not required to be searched by this Authority, namely:
Remark: Although claim 26 is directed to a method of treatment of (diagnostic method practised on) the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 96/01433

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9107425 A	30-05-91	AU 636944 B	13-05-93
		AU 6905591 A	13-06-91
		CA 2068713 A	21-05-91
		CN 1054613 A	18-09-91
		CN 1054793 A	25-09-91
		EP 0502105 A	09-09-92
		ES 2052478 T	16-07-94
		JP 5503629 T	17-06-93
		OA 9698 A	30-08-93
EP 508809 A	14-10-92	AU 1538692 A	17-11-92
		CA 2107879 A	11-10-92
		WO 9218621 A	29-10-92
		JP 6506826 T	04-08-94
		NO 933613 A	09-12-93
		ZA 9202659 A	11-10-93
WO 9105864 A	02-05-91	CA 2067333 A	14-04-91
		EP 0495811 A	29-07-92
		JP 2537570 B	25-09-96
		JP 4506301 T	05-11-92
		US 5571712 A	05-11-96
		US 5439809 A	08-08-95
WO 9119803 A	26-12-91	NONE	
WO 9203537 A	05-03-92	CA 2089497 A	16-02-92
		EP 0652967 A	17-05-95
		JP 6500232 T	13-01-94
		US 5420026 A	30-05-95
CA 2098029 A	10-12-94	NONE	
WO 9605292 A	22-02-96	AU 3159995 A	07-03-96